

MARS

SYSTEM

Process

~~START~~ RETURN is Big But MARS is closed

MSP -- CHANGES FROM V0.158 TO V0.159

The following changes have been made in version 0.159 of the Mars Supervisory Processor (MSP) code:

1. KLINIK line information preserved during a MSP reload is no longer cleared whenever a main memory program is run. The KLINIK line also remains enabled during the MSP reload process.
2. After MSP is reloaded, DTR to the console line was temporarily dropped during the initialization process for several seconds. This caused output to be lost on terminals which depend on DTR.

MSP -- CHANGES FROM V0.157 TO V0.158

The following changes have been made in version 0.158 of the Mars Supervisory Processor (MSP) code:

1. The autoboot code was broken in version 0.156. On power up, versions 0.156 and 0.157 would try to reboot MSP instead of take commands from POWINI.CMD.

MSP -- CHANGES FROM V0.156 TO V0.157

The following changes have been made in version 0.157 of the Mars Supervisory Processor (MSP) code:

1. The Supervisor can now boot from a SCSI tape drive. The boot tape must be in core dump mode and have a block size of either 128, 256 or 512 words. The SI channel must be loaded with version 6 or later of the SI microcode. Older microcode versions can not handle the larger block sizes.

The Supervisor never issues a SCSI RST to the SCSI tape drive since it may cause some tape controllers to forget the current tape position. The user may force a SCSI RST by specifying the /SCSI-RESET switch. The Supervisor also delays 1/4 second after issuing a SCSI RST to allow the SCSI devices to come back online.

2. KLINIK line information is now preserved across Supervisor reloads.
3. The Supervisor now responds to a monitor BUGHLT or STOPCODE within 30 seconds. Previously, it took the Supervisor 10 minutes to notice the monitor crash.

MSP -- CHANGES FROM V0.153 TO V0.156

The following changes have been made in version 0.156 of the Mars Supervisory Processor (MSP) code:

1. The EI and CI channels now work correctly after a continuable dump. Previously, the dump process destroyed configuration information in the channels which prevented the system from continuing successfully after the dump.
2. The Supervisor now performs a SCSI RST before accessing a SCSI device. The reset is done on each SCSI bus whenever the SI channel is started.
3. The Supervisor now looks at the SI microcode version to report the correct protocol version. Protocol version 2 indicates the SI microcode supports Target mode.
4. Newer channel microcode ROM's now have a flag which indicates the microcode comes from the Supervisor ROM's. The ROM channel microcode is often an older or incomplete version. The SHOW VERSION command can display this flag. The Supervisor also prints a warning if a channel contains ROM microcode when a monitor or other main memory program is run.
5. The AUTOBOOT command now has a /BOOT switch which forces the

Supervisor to reboot MSP.

6. The DEFINE/AUTOMATIC command is a nop for a tape source.
7. The channel CRAM examine and deposit commands no longer steps the channel clock. In some instances, stepping the clock may prevent the CM and PM commands from correctly continuing the microcode.
8. The LOAD MICROCODE command now uses the CRAM data size to determine if it will fit in the CRAM. Previously, the total file size was used so the Supervisor would erroneously report that a file containing both the SI microcode and nanocode did not fit in the CRAM.
9. The SET KLINIK command is a nop if the line and password arguments are the same as a previous SET KLINIK command.
10. The SHUTDOWN command now stores -1 in executive memory location 30 octal instead of 1. This is what the monitor expects.

MSP -- CHANGES FROM V0.150 TO V0.151

The following changes have been made in version 0.151 of the Mars Supervisory Processor (MSP) code:

1. A bug in the memory error display code has been fixed. Previously the code to analyse the serious memory error bits would report no errors found. Memory errors reported by the MSP polling code and the SHOW LAST-ERROR-STAT command should now work properly.
2. The IM command should now cause correctable memory errors to be reported if the error log argument specifies it. Previously, correctable memory errors were not enabled.

MSP -- CHANGES FROM V0.148 TO V0.150

The following changes have been made in version 0.150 of the Mars Supervisory Processor (MSP) code:

1. The channel SET ERROR-ENABLES command can now be used to set enables for the WDMSC diagnostic register.
2. The DUMP and SHOW DUMP commands for dumping and displaying CI LCA status have been eliminated.
3. Outgoing dataset lines are now supported. The primary protocol enable/disable remote functions have also been implemented. The SHOW TERMINAL command now displays a status of INCOMING or OUTGOING ~~for all enabled dataset in use.~~
4. Support for KI mode and DC10 terminal emulation has been removed since the CPU microcode no longer support these features. All terminal lines are now assumed to be DTE lines.

The CPU microcode version 15 or later can now inform the Supervisor whenever the EPT is moved. The Supervisor will stop all channels started by the CPU and restart them with the updated EPT information.

The format of some scratch pad data has been changed in the latest version of the CPU microcode. Old versions of the Supervisor code will no longer emulate virtual memory accesses correctly.

5. The Supervisor now supports the new SI (SCSI Interface) channel. The SI channel can access multiple SCSI ports. Additional ports require additional SI device cards.

The SI channel can be assigned to a CPU as either a RH channel or an IU channel. The channel is assumed to be an RH channel by default. It may be changed to an IU channel by specifying the IUSI channel type with the SELECT command.

On reset, the Supervisor can detect the SI channel and read back the switches on the SI device card. If a valid SCSI id

on all the device cards. If no arguments are given with the
LOAD MICROCODE command, the Supervisor assumes the following
default filenames: SI10U.BIN and SI10U.NAN.

The SI channel requires CPU microcode version 15 or later. The Supervisor will treat an SI channel as an unknown channel for earlier versions of the CPU microcode.

The optional argument to the ASSIGN CHANNEL command specifies a bit mask of enabled ports where bit 2**n representing port n. The default is for all detected SCSI ports to be enabled. An ASSIGN CHANNEL command with no logical channel argument causes the Supervisor to use a RH number or IU number which is based on the physical channel number.

The Supervisor does not currently support using the SI channel to access a Front-End File System.

The following Supervisor bugs have been fixed:

1. The channel hardware testing code should now work more reliably. It would sometimes detect spurious device cards in non-existent device card positions.
2. The channel microcode verification error printout has been fixed. It printed incorrect addresses for verification errors which occurred in a non-zero CRAM bank.
3. The Supervisor now starts the EI channel whenever the NI is restarted with the KNILDR program. (This assumes the various TOPS-20 monitor bugs have also been fixed.)
4. The Supervisor now uses a 10 minute keep-alive timeout limit whenever the monitor enters secondary protocol. Previously, the timeout limit would sometimes revert back to the 30 second limit which is used by the Supervisor when the monitor is in primary protocol. This short timeout limit was not long enough for the monitor to perform a continuuable dump. The Supervisor assumed the monitor crashed and would begin the crash retry procedure.
5. The Supervisor DTE code has been fixed so it now works properly if the Front-End DTE is not DTE 0.

Various DTE protocol switching problems have also been fixed.

MSP -- CHANGES FROM V0.146 TO V0.148

The following changes have been made in version 0.148 of the Mars Supervisory Processor (MSP) code:

1. A bug in the IM/AUTOMATIC command has been fixed. Previously, the Supervisor reported the correct number of memory cards detected but always configured main memory for one memory card.
2. The SET CLOCK-SPEED command now waits for the system clock to be in a good state before updating the hardware to change the clock speed. Previously, the Supervisor randomly updates the system clock hardware. This sometimes causes the system clock to misbehave.
3. The error data collected for the SHOW LAST-ERROR-STAT command is now timestamped and the date and time is displayed in GMT.
4. The LOAD MICROCODE command now aborts on the first verification error if the command was taken from a command file.
5. The Supervisor now knows about time zones and Daylight Savings Time.

Local time is enabled when the SET TIME-ZONE command is used to set a time zone (-12 <= time zone <= 12) and is disabled with the CLEAR TIME-ZONE command. The time zone is displayed with the SHOW TIME-ZONE command. Initially, local time is not enabled.

If local time is enabled, Daylight Savings Time may also be specified with the SET DAYLIGHT-TIME command. If no arguments are given, then Daylight Savings Time is always in effect. The Supervisor automatically determines when Daylight Savings Time takes effect if starting and ending thresholds are given. Each threshold is specified by a pair of numbers: a month number and a week number. The month number ranges from 1 through 12, while the week number ranges

is still in GMT. When the local time feature is enabled, the date and time given with the SET DATE-AND-TIME command is assumed to be in local time unless the /GMT switch is specified. The data and time displayed by the SHOW

DATE-AND-TIME command is shown in local time unless the /GMT switch is specified. Local date and time is also given to the monitor (TOPS-20 or TOPS-10 v7.03).

The local time feature was added mainly so the correct date and time can be passed to TOPS-10 version 7.03. TOPS-10 does not know about time zones or Daylight Savings Time so it requires a local date and time.

6. When a DSR parity error occurs the contents of the DSR and the original DSR data are now displayed. DSR parity is now also checked for DSR data from the CPU. Bad DSR parity from the CPU only causes a warning to be printed.
7. This version of the MSP code must be used in conjunction with version 13 of the CPU microcode and version 6 of the MI microcode before the MASSBUS extensions can be used.

MSP -- CHANGES FROM V0.145 TO V0.146

The following changes have been made in version 0.146 of the Mars Supervisory Processor (MSP) code:

1. The following changes have been made to the DEFINE command:
 1. The maximum number of logical name definitions has been increased to 20.
 2. If the /AUTOMATIC switch is specified, then the structure name is extracted from the home block of the default disk source and is defined as a logical name with the parameters of the default source.
 3. If only a logical name argument is specified, then the logical name is defined with the parameters of the default source.
 4. The last logical name defined with the parameters of the default source is assumed by the Supervisor to be the logical name for the default source. The SHOW SOURCE command will display this logical name.
2. If the /AUTOMATIC switch is specified with the IM command, then the Supervisor automatically determines the number of existing memory cards and configures the memory unit.

Only contiguous memory cards are detected by the Supervisor. The first memory card must be in slot 0 of the memory unit. All detected memory cards are then configured using the maximum possible interleave mode.

The size of the memory cards is determined from a backpanel jumper which currently defaults to the 1 meg cards. Error logging mode 3 (log serious errors and automatically clear memory faults) is also assumed by the Supervisor.

Automatic memory configuration requires the selected unit to be either a channel or CPU. The unit must also have valid microcode because the Supervisor uses the selected unit to

The /CONSTANTS: switch for the LOAD MICROCODE command now has a new CHECK option. For CPU constant (fast memory) data, this option causes only the non-zero data in the file to be

verified. This is useful in detecting if the CPU microcode has accidentally overwritten the constants in fast memory.

5. The HALT command now halts a program reliably if it is used on a CPU which is running version 12 or later of the CPU microcode.

The automatic channel assignment now assigns MI channels differently if the CPU microcode is version 12 or later. There is now a mapping between physical channels to logical RH channels. The mapping tries to assign the MI channels to the low four RH slots (RH0 to RH3) because some standalone programs, such as diagnostics, require this. For older versions of the CPU microcode, the first unused logical RH channel is assigned beginning with RH2. With the new version, assignment conflicts are now possible but they should still be detected by the SM command for the CPU.

6. Several changes have been made in the monitor crash detection and recovery code.

The Supervisor now disables the IF TIMEOUT command if MONBTS successfully brings up a new TOPS-10 monitor. Previously the Supervisor disabled the IF TIMEOUT command only if the LOAD PROGRAM or RUN command had been used to reload the monitor.

When a monitor goes into secondary protocol, the KEEP-ALIVE timeout is increased to 10 minutes. This timeout is reset back to 30 seconds when secondary protocol is exited.

The SET and CLEAR HOST DEBUG primary protocol functions have been implemented. These functions cause the KEEP-ALIVE check to be enabled or disabled.

7. If a channel was started by a CPU and it is deassigned from the CPU then the Supervisor performs an internal SM command on the channel if its clock is running. This prevents the channel from accessing memory when a new system is run. Deassigned channels are unaffected by reset commands from the CPU and may sometimes cause the system to crash.

8. The following bugs have been fixed:

The /CONSTANTS: switch for the LOAD MICROCODE command now has a new CHECK option. For CPU constant (fast memory) data, this option causes only the non-zero data in the file to be

3. The CPU history stack pointer contents displayed by the MS command was shown as a 12 bit quantity. It is actually 13 bits.

MSP -- CHANGES FROM V0.144 TO V0.145

The following changes have been made in version 0.145 of the Mars Supervisory Processor (MSP) code:

1. The automatic assignment of a DT channel failed to pass the logical assignment information to the DT channel microcode so the channel did not communicate with a monitor correctly. This problem has been fixed.

4. The Supervisor failed to reenable input to Supervisor terminal lines after a protocol switch. The SET TERMINAL command had to be used to DISABLE and then ENABLE the lines before they would accept input.

A related problem was the failure of the console to accept input after the reset button is pressed and the R (restart) MSPROM option is selected. The I (initialize) MSPROM option had to be selected before the console accepted further input.

5. The TOPS-10 paging simulation code had a bug where certain ranges of page numbers did not index the page tables in the UPT and EPT correctly.

A check for invalid section numbers for both TOPS-10 and TOPS-20 page simulation has also been added.

MSP -- CHANGES FROM V0.143 TO V0.144

The following changes have been made in version 0.144 of the Mars Supervisory Processor (MSP) code:

1. The EI channel type is now detected more reliably on reset. Previously the Supervisor failed to determine the type of an EI channel after a power-on-reset.

Additionally, the Supervisor now detects all DTUs connected to a DT channel on reset. A mask of the detected DTUs is displayed as part of the hardware information printout after the reset.

NOTE

Only DTUs with power can be detected by the Supervisor.

2. If no file specification is supplied with the LOAD MICROCODE command then the Supervisor assumes the following defaults:

1. Channel microcode is in the file "xx10U.BIN" where xx is dependent on the channel type.
2. CPU microcode, nanocode and constant data are in the files "M1LX.ULD" and "M1LX.REL".
3. All microcode files are on the default source, that is, the source which was selected with the SET SOURCE command.

If the channel or CPU type is not known, then the LOAD MICROCODE command without a file specification is a nop. If a file specification is given, then the microcode is always loaded.

3. If no logical channel information is supplied with the ASSIGN CHANNEL command then the Supervisor assumes the following

The microcode version of a CPU is assigned with an IU subchannel number which is different from the physical subchannel number. This feature is only implemented in newer versions of the CPU microcode.

The CPU microcode version was previously determined only after the CPU microcode was started or loaded so this type of IU channel assignment failed if it was made immediately after a Supervisor reload.

2. The command line control S problem has been fixed. A control S in the middle of the Supervisor command line would cause a Supervisor crash recovery command to be connected to a

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4. EI channels are always assigned as RH5.
5. MI channels are assigned the next available RH number beginning with RH2.

If the channel type is not known, then the ASSIGN CHANNEL command without the logical channel information is a nop.

detected on reset.

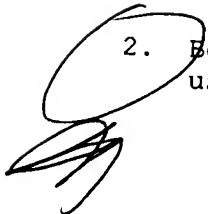
MSP -- CHANGES FROM V0.141 TO V0.142

The following changes have been made in version 0.142 of the Mars Supervisory Processor (MSP) code:

1. The power failure restart code has been extended to allow for booting from disk drives connected to FA and SA channels. Because 256 device addresses are possible for a SA channel, all power failure restart (PFR) status messages are now disabled until one of the required files are found. The status messages are only displayed if the /INFORM command switch is specified with the AUTOBOOT command.

The following changes have been made to the SA Front-End File System access code to speed up the power failure restart search:

1. A NOP/SENSE operation is now performed on all devices connected to a SA channel before it is accessed. The access is aborted if the sense data does not indicate the drive is of the specified source type (DISK or TAPE).
2. If a select error occurs while accessing a SA drive, then a sense will not be performed.
3. If the Supervisor gets a hung timeout error on a SA channel during the power failure restart process, then it assumes the bus and tag cables are missing for the channel and skips to the next channel.

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2. Both dip switches on the back edge of the MSP card are now used to determine the initial baud rate of the console line.

DIP1	DIP2	Speed
----	----	-----
OFF	OFF	2400
OFF	ON	300
ON	OFF	9600
ON	ON	1200

These switches are read whenever the reset button is pressed. If the monitor is TOPS-10, the vector in physical memory location 401 octal is accessed. If the vector is a JRST, then the right half of 401 contains the DDT start address. If the vector is a XJRST, then the right half of 401 is a

pointer to the location containing the DDT start address.

If the monitor is not TOPS-10, then the right half of location 74 octal is used.

5. The RUN, START and DEBUG commands now have a /PASS: switch which is used to indicate how many passes of a diagnostic are to be run. When the pass limit is reached, the Supervisor automatically halts the diagnostic and exits user mode. The maximum pass count is 30000.
6. The SET ERROR-ENABLES command no longer forces the error halt enable flag to be on for a CPU unit. It is up to the user to insure this bit is set whenever new error enables are set for a CPU.
7. Since the Supervisor currently can not detect the power frequency, the SET POWER-FREQUENCY command is used to tell the Supervisor whether the power frequency is 50 or 60 HZ. The Supervisor will pass this information to a CPU when its microcode is started.

The SHOW POWER-FREQUENCY command displays the power frequency.

The default power frequency is 60 HZ.

MSP -- CHANGES FROM V0.140 TO V0.141

The following changes have been made in version 0.141 of the Mars Supervisory Processor (MSP) code:

1. Supervisor ROMs made from this version of the code can recover from a power failure if the channel microcode ROMs are recent enough to contain version information.

On power up, the ROM Supervisor will wait 30 seconds for operator input. If there is no input, the Supervisor will begin the power failure restart process which consists of the following steps:

1. Turn on the power to all units. This will perform a power on reset on all the units if they already have power.
2. Beginning with CHN0, cycle through the channels looking for an MI channel. If one is found, load and verify the channel with microcode from ROM and proceed to the next step. After CHN7, go back to step 1.
3. Beginning with drive 0, access each drive looking for a front end file system which contains the file MSP.BIN. If there is an error or the file is not there, go to the next drive. After drive 7, go back to step 2. If the file is found, reboot the Supervisor.

The Supervisor will retry this procedure 20 times before giving up.

Once the RAM Supervisor is loaded, it will immediately begin the power failure restart procedure without the 30 second delay and it will be looking for the command file POWINI.CMD.

The RAM Supervisor will automatically restart only if it was loaded by the ROM Supervisor with the power failure restart procedure.

2. A new command, AUTOBOOT, can be used to manually cause the Supervisor to go through the power failure restart procedure.

MSP -- CHANGES FROM V0.137 TO V0.140

The following changes have been made in version 0.140 of the Mars Supervisory Processor (MSP) code:

1. The channel "LCR" and "LCRX" commands were broken when the parity control switches were added. Unless the "/NO-PARITY" switch was specified, random data would get loaded into the channel control register. This problem has now been fixed.

Several other other minor problems have been fixed. The "?File not found" error message for the "DEBUG", "LOAD PROGRAM" and "RUN" commands was printing a garbage filename. The channel hardware status printout was not printing the contents of the 2901 Q register correctly. The "?CPUx clock halt" message was displaying extra register data. THE "ASSIGN MEMORY" command now works properly. It failed to use the memory relocation argument and was storing garbage.

2. The channel microstack can now be displayed as part of the hardware status printout after a "LCRX" or "PM" command. For these commands, the Supervisor will collect and display the channel microstack whenever it is possible to do so without destroying the channel state. If the channel state will be destroyed, then no stack information will be collected unless the "/STACK" switch is specified.
3. The Supervisor can now access front-end files on word mode and natural mode SA disks. Previously, only word mode SA disks were supported.

MSP -- CHANGES FROM V0.136 TO V0.137

The following changes have been made in version 0.137 of the Mars Supervisory Processor (MSP) code:

1. The parity control switches, `"/BAD-PARITY"` and `"/NO-PARITY"` have been added to the `"LCR"` and `"LCRX"` commands. This allows any arbitrary data to be loaded into the control register. If no parity control switch is specified, the Supervisor will always set good parity.
2. The `"DEFINE"` and `"SET SOURCE"` commands will no longer verify whether the specified channel is appropriate for the source type. Verification will occur only when the source is accessed. This change allow command files with logical device definitions to execute successfully even though the source channel is missing or is of the wrong type.
3. The latest CPU and channel microcodes now have microcode version information stored in known CRAM locations. The Supervisor will extract and store this information whenever the CPU or channel microcode is loaded or started. Older microcodes which do not support these standards will always have a microcode version of 0.

The channel microcode version information also contains a channel type identifier so before a channel clock is started, the Supervisor will now verify the microcode is appropriate for the channel and print a warning if it is not.

The microcode version information of the selected unit (if it has power and the information has been collected) can be displayed with the `"SHOW VERSION"` command. If the `"/ALL"` switch is used, then the microcode version information for all units will be displayed.

4. The channel microstack size (on the UC card), the channel buffer size (on the UD card) and the UD card version will now be determined and displayed by the Supervisor whenever a channel is reset with the `"RESET"` command.

MSP -- CHANGES FROM V0.134 TO V0.136

NOTE

The MSP binary has outgrown the 16 bit addresses used in the .BIN file format so this and all future versions of MSP code will be in an image mode format which requires no MSFILE preprocessing. The extension .BIN will still be used. Until the MSFILE program is fixed to distinguish between the two different types of MSP binaries, the EXE file type should be used when the new MSP binary is written out into the front end file system. The directory page must then be patched to change the MSP file type to 68K. The file MSP.MIC shows how this is done.

The following changes have been made in version 0.136 of the Mars Supervisory Processor (MSP) code:

1. The Supervisor now correctly emulates KLDCP diagnostic input and output processing.

In the teletype input mode, all input will be echoed and rubouts and ^U will be processed. No input will be given to the CPU until an end of line occurs. Also if there is no input within 3 minutes, a null will be returned.

In the DDT input mode, all characters will be passed to the CPU without any processing. If there is no input within 5 seconds, a null will be returned.

For teletype output, XON, XOFF and output flushing (^O) will now work.

2. A new switch "/ZAP" has been added to all commands which

will be executed if the controller is a TM02 or TM03, while a TM78 controller will be reset.

A source zap will now happen automatically if the source

channel microcode is not running or if no CPU is using it. A CPU is using a channel if the channel is assigned to it and it is executing a program.



There is also an implied "/ZAP" on command files which are taken because of a CPU crash.

3. The channel LOAD MICROCODE problem has been fixed. If a large channel microcode is loaded and then a smaller microcode is loaded, the rest of the cram of the second channel may contain some of the first channel microcode. The rest of the cram will now be cleared.
4. If the console is in console mode and it is assigned to a CPU as the CTY, then the console will automatically reenter user mode if there has been buffered CTY output for 55 seconds. This feature has been added to prevent the CTY stuck problem which may occur for TOPS-20 if the console is left at the MSP prompt level.
5. There has been a number of KLINIK fixes and changes:

The KLINIK dataset line hang up problem which causes KLINIK configuration information to be lost has been fixed. If the Supervisor detects the loss of carrier for the KLINIK line then it will now hang up and disable the KLINIK line correctly.

The KLINIK line timeout feature which causes the KLINIK line to be disabled if there is no user input for 60 minutes will now only apply to local lines. The timeout has also been reduced to 10 minutes.

If an encrypted KLINIK password of -1 is specified ("SET KLINIK x -1"), then no password is required to gain access to the KLINIK line. The KLINIK line will always be enabled when a connection is made.

6. The "SHOW LAST-ERROR-STAT" command has been fixed so it complains if it must access the CPU hardware and the CPU clock is still running. 
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"IF TIMEOUT seconds file spec" which causes commands to be taken from the specified file if the selected CPU has not entered primary protocol within the specified timeout. The "CLEAR CPU TIMEOUT" command is used to disable the timeout.

The following RETRY options are now available:

ALL

Handle all CPU crashes.

BUG-HALT

If a BUGHLT occurs (the monitor requests a reload), then commands will be taken from the file DSKn:BUGHn.CMD.

CLOCK-HALT

If a CPU clock halt occurs, then commands will be taken from the file DSKn:CLKHn.CMD.

KEEP-ALIVE

If the monitor fails to update its keep alive counter for 30 seconds, then commands will be taken from the file DSKn:KPALVn.CMD. This handles the case of primary protocol dropping dead and the monitor staying in the protocol pause state too long. This check must be disabled if a user is debugging a monitor and has inserted breakpoints.

PROGRAM-HALT

If a program halt occurs, then commands will be taken from the file DSKn:PROGHn.CMD.

PRIMARY-PROTOCOL

If MSP detects a primary protocol error, then commands will be taken from the file DSKn:PPERRn.CMD.

When primary protocol is entered, the Supervisor begins checking the CPU keep alive counter. If the counter is unchanged for 30 seconds, the Supervisor determines what caused the crash and then takes the appropriate command file if the RETRY option for the crash is enabled. If the RETRY option is not enable, the Superivsor assumes the user will handle the crash. All crashes will have this 30 second delay except for the primary protocol error which is handled immediately since the monitor may be still be updating its keep alive counter.

Once a crash has been detected and handled, a flag will be

dump/reload fails.